Modeling Nature: Cellular Automata Simulations with Mathematica®. By Richard Gaylord and Kazume Nishidate. Springer-Verlag, New York. (1996). 260 pages. DM 64.00; öS 467.20; sFr 56.50 (diskette included).
Contents:

The what, why, and how of this book. Acknowledgments. 1. A toolkit for programming cellular automata. 2. The game of life. 3. Traffic engineering. 4. Spinoidal decomposition and phase-ordering in binary mixtures. 5. Solidification. 6. Snowflakes. 7. Interacting random walkers. 8. Interfacial diffusion fronts and gradient percolation. 9. Two-species driven diffusion. 10. Coalescence. 11. Adsorption-Desorption. 12. Chemotaxis. 13. Ant colony activity. 14. Predator-prey ecosystems. 15. Contagion in excitable media. 16. The evolution of cooperation and the spatial prisoner's dilemma game. Appendices. A. *Mathematica* programming tutorial. B. Working with lists. C. Program listing. Index.

Laboratory Experiences in Group Theory: A Manual to be used with "Exploring Small Groups". By Ellen Maycock Parker. The Mathematical Association of America, Washington, DC. (1996). 81 pages. $22.00 (diskette included).
Contents:

Introduction. Acknowledgments. 1. Groups and geometry. 2. Cayley tables. 3. Cyclic groups and cyclic subgroups. 4. Subgroups and subgroup lattices. 5. The center and commutator subgroups. 6. Quotient groups. 7. Direct products. 8. The unitary groups. 9. Composition series. 10. Introduction to endomorphisms. 11. The inner automorphisms of a group. 12. The kernel of an endomorphism. 13. The class equation. 14. Conjugate subgroups. 15. The Sylow theorems. Appendices. A. Table generation menu of *ESG*. B. Sample library of *ESG*. C. Group library of *ESG*. D. Group properties menu.

The Sciences of the Artificial, (Third edition). By Herbert A. Simon. MIT Press, Cambridge, MA. (1996). 231 pages. $14.50.
Contents:

Preface to the third edition. Preface to the second edition. 1. Understanding the natural and artificial worlds. 2. Economic rationality: Adaptive artifice. 3. The psychology of thinking: Embedding artifice in nature. 4. Remembering and learning: Memory as environment for thought. 5. The science of design: Creating the artificial. 6. Social planning: Designing the evolving artifact. 7. Alternative views of complexity. 8. The architecture of complexity: Hierarchic systems. Name index. Subject index

Mathematica 3.0: Standard Add-On Packages. Edited by Emily Martin. Wolfram Media/Cambridge University Press, Champaign, IL/Cambridge, U.K. (1996). 516 pages. $59.95 (hardback); $29.95 (paperback).
Contents:

1. Introduction. 2. Algebra. 3. Calculus. 4. Discrete mathematics. 5. Geometry. 6. Graphics. 7. Linear algebra. 8. Miscellaneous. 9. Number theory. 10. Numerical mathematics. 11. Statistics. 12. Utilities. Appendix: How *Mathematica* packages are set up. Index.

Vicious Circles: On the Mathematics of Non-Wellfounded Phenomena. By Jon Barwise and Lawrence Moss. CSLI Publications, Stanford, CA. (1996). 390 pages. $49.95 (hardback); $24.95 (paperback).
Contents:

I. Background. 1. Introduction. 2. Background on set theory. II. Vicious circles. 3. Circularity in computer science. 4. Circularity in philosophy. 5. Circularity and paradox. III. Basic theory. 6. The solution lemma. 7. Bisimulation. 8. Substitution. 9. Building a model of ZFA. IV. Elementary applications. 10. Graphs. 11. Modal logic. 12. Games. 13. The semantical paradoxes. 14. Streams. V. Further theory. 15. Greatest fixed points. 16. Uniform operators. 17. Corecursion. VI. Further applications. 18. Some important greatest fixed points. 19. Modal logics from operators. 20. Wanted: A strongly extensional theory of classes. 21. Past, present, and future. Appendix. Definitions and results on operators. Answers to the exercises. Bibliography. Index.

Goodbye, Descartes: The End of Logic and the Search for a New Cosmology of the Mind. By K. Devlin. John Wiley & Sons, New York. (1997). 301 pages.
Contents:

Preface. 1. Patters of mind. 2. A passion for order. 3. The law of thought. 4. From symbols to silicon. 5. The science of language. 6. Language in the mind. 7. Machines that think. 8. Communication is the key. 9. Verbal tangos. 10. The Cheshire cat's grin. 11. Goodbye, Descartes. Selected further reading. Index.

Introduction to Discrete Mathematics with ISETL. By William E. Fenton and Ed Dubinsky. Springer-Verlag, New York. (1996). 194 pages. DM 64.00; öS 467.20; sFr 56.50.
Contents:

Comments for the instructor. 1. Numbers and programs. 2. Propositional calculus. 3. Sets and tuples. 4. Predicate calculus. 5. Relations and graphs. 6. Functions. 7. Mathematical induction. 8. Partial orders. 9. Infinite sets. Appendices. 1. Getting started with ISETL. 2. Some special code. Index. Index of frequently used sets and functions.